MIS 5170

Operating System Security

Week 11

Unix/Linux
Configuration Management

Fox School of Business
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Tonight's Plan

❑ Questions from Last Week

❑ Review on-line posts

❑ In The News

❑ Configuration management practices

❑ Unix/Linux System hardening

❑ Baselines

❑ Assignment 4 Overview

❑ Next Week

❑ Quiz

Questions From Last Week

- ❑ Any Questions from last week?
  - ◘ Windows FireWall Logging
    - ▪ How do we enable it?
      - ▪ Server Manager

  - ◘ Windows FireWall configuration that protects protocols
    - ▪ Telent would an insecure protocol
      - ▪ IPSec is the configuration that protects insecure protocols
        - ▪ How do you turn this on?
          - ▪ These are listed under "Windows Security Rules"

  - ◘ What is as important as enabling logging?

Questions From Last Week (cont)

❑ Any additional questions?

Review on-line posts

❑ Found a new site from an on-line post:

- ❑ http://thehackernews.com
- ❑ Interesting site; remember always verify your source!
  - ■ I was not able to verify the claims, not saying the are ture or false, but I was not able to find something specific.
  - ■ I also have not heard anything from my internal teams about this.

❑ Questions about GPO's staying in VM without DC?

- ❑ Yes

❑ Things to remove:

- ❑ Loi Van Tran had a very good list of items to remove.
  - ■ One additional thing to look for is .dmp files (memory dump files)

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Review on-line posts (Cont)

❑   Questions?

In the News

- ❑ Unix/Linux
  - ◻ How many devices in your enterprise are running it?
    - ◼ Dr. Eric Cole URL Goes Here!

- ❑ Phishing 101 at the School of Hard Knocks
  - ◻ Two Factor Authentication (2FA) – Rolling 6 digit chalange code
    - ◼ https://krebsonsecurity.com/2017/03/phishing-101-at-the-school-of-hard-knocks/

- ❑ eBay Asks Users to Downgrade Security
  - ◻ Changes from MFA Token to texting code to users
    - ◼ https://krebsonsecurity.com/2017/03/ebay-asks-users-to-downgrade-security/

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In the News (Cont)

- ❑ Google Chrome to Distrust Symantec SSLs for Mis-issuing 30,000 EV Certificates
  - ◘ EV Cert Trust Wars ("my words")
    - ▪ http://thehackernews.com/2017/03/google-invalidate-symantec-certs.html
- ❑ Questions?

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Configuration Management Practices

❑ Remember these from Week 4?

  ❏ We looked at these on Windows; now on Unix/Linux

❑ What is configuration Management?

❑ How can it help us?

❑ How can it secure an operating system?

❑ What are the steps?

Configuration Management Practices (cont)

❑ What is configuration Management?

  ◻ Configuration Management is a set of steps that creates and maintains consistency in our case of an operating system.

  ◻ This can be a Baseline, which we will look at later tonight.

  ◻ Can be as simple as a run-book, which is a set of documents that is followed when installing an operating system or application on top of said operating system.
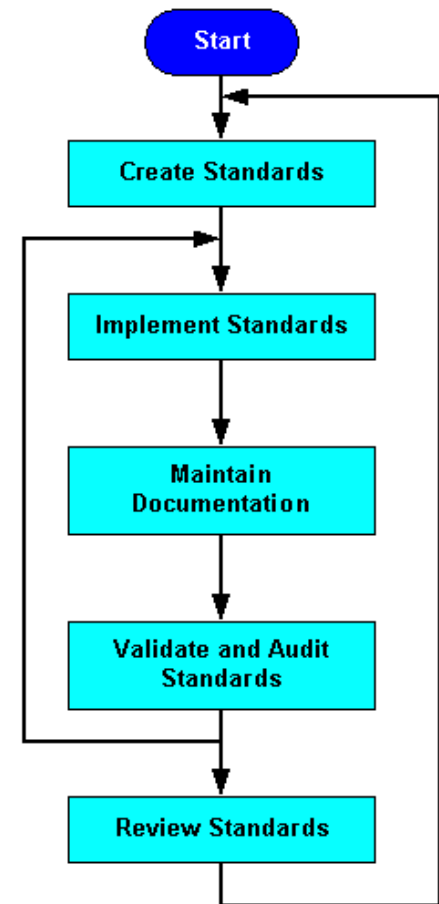
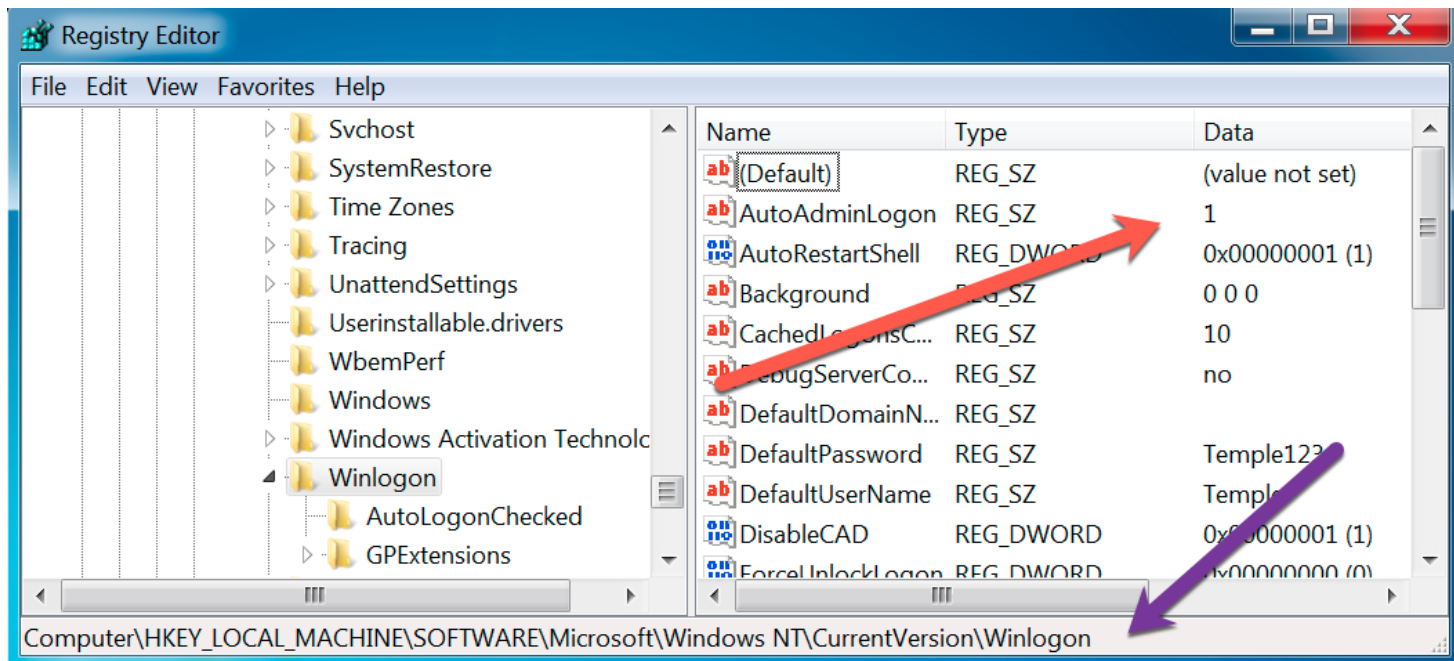# Configuration Management Practices (cont)

❑ How can it help us?

  ◘ This can help us to find deviation when we run a baseline difference scan.

    ■ Baseline Difference Scan = what has changed or is no longer equal to a setting we want to maintain

  ◘ Tools like PowerShell Desired State Configuration on Windows

  ◘ With Unix/Linux tools like puttet

    ■ Learn Puppet is the following link:

      ■ https://puppet.com/download-learning-vm?ls=paid-search&ccn=digital-PMG-pe&pub=bing&cid=701G0000001dTYu&utm_medium=paid-search&utm_campaign=digital-PMG-pe&utm_source=bing&utm_content=learning-vm&utm_term=puppet

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Configuration Management Practices (cont)

❑ How can it secure an operating system?

  ❑ Track things we don't want to ever see; and flag them as invalid values in areas we have seen last week.

Configuration Management Practices (cont)

❑ How can it secure an operating system? (cont)

   ◻ By tracking and alerting for those settings that just should not be in the environment.

      ■ https://technet.microsoft.com/en-us/library/cc939702.aspx

··· > Windows NT > CurrentVersion > Winlogon ▾

···   ‹

LegalNoticeCaption

ShutdownWithoutLogon

System

AutoAdminLogon

DefaultDomainName

DCacheUpdate

ShowLogonOptions

SlowLinkProfileDefault

SFCDllCacheDir

DCacheMinInterval

AutoAdminLogon

HKLM\SOFTWARE\Microsoft\Windows NT\CurrentVersion\Winlogon

Data type	Range	Default value
REG_SZ	0 | 1	0

Description

Determines whether the automatic logon feature is enabled. Automatic logon uses the domain, user name, and password stored in the registry to log users on to the computer when the system starts. The **Log On to Windows** dialog box is not displayed.

Value	Meaning
0	Disables automatic logon.
1	Enables automatic logon.

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Configuration Management Practices (cont)

❑ How can it secure an operating system?

  ◘ Telnet

Audit:

Ensure the `telnet` services is not enabled:

```
# grep ^telnet /etc/inetd.conf
```
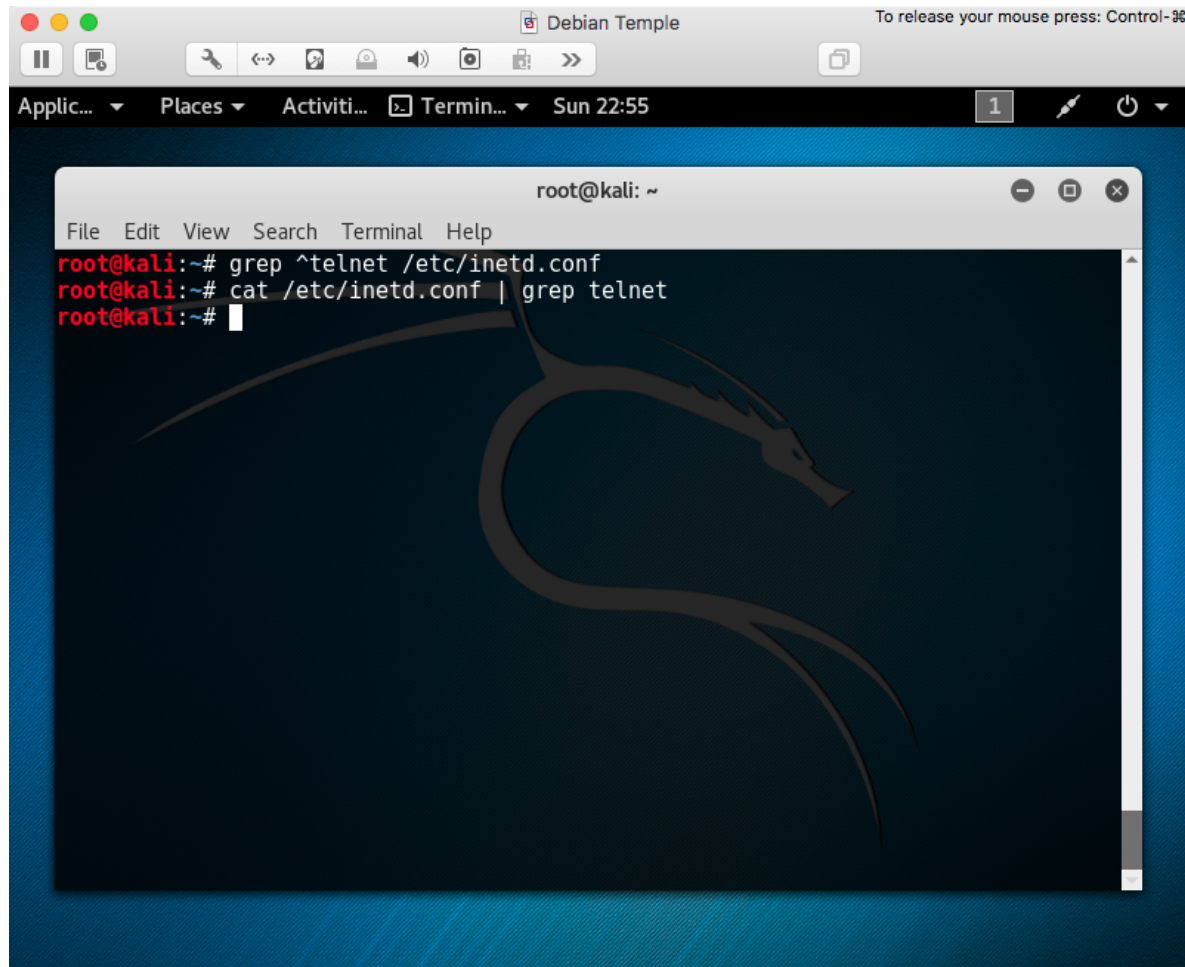No results should be returned.

Remediation:

Remove or comment out any `telnet` lines in `/etc/inetd.conf`:

```
#telnet          stream  tcp      nowait  telnetd /usr/sbin/tcpd  /usr/sbin/in.telnetd
```

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Configuration Management Practices (cont)

□   Telnet

Configuration Management Practices (cont)

❑ What are the steps?

 ◘ Review company policies or best practices like:

  ■ CIS Debian Baseline: <u>On-Line</u>

 ◘ Create a run-book or use tools like puppet

 ◘ Create a script or an Image, similar to what we have done with our snap-shots

 ◘ Run a difference baseline to see if there is drift

  ■ If so chose set them back or alert on drift

Configuration Management Practices (cont)

❑ Questions?

Unix/Linux System hardening

❑ What is system hardening?

❑ How do you know what to turn off?

❑ Using a baseline to help

Unix/Linux System hardening (cont)

❑ What is system hardening?

  ❑ System hardening is to remove default services or configuration from running or being part of the operating system.

  ■ Removing or shutting down services

  ■ Changing the default setting(s) to what your enterprise needs or company policy and/or standards says

Unix/Linux System hardening (cont)

❑　How do you know what to turn off?

- ❑ Anything that is not needed to make your operating system function as needed for the use case.
  - Example:
    - Default AWS AMI
      - Turn off all services except inbound ssh
        - Update-rc.d ssh disable

Unix/Linux System hardening (cont)

❑ Using a baseline to help

   ◻ Review what it is doing

   ◻ Apply those that keeps from breaking your operating system for it's primary usage

      ■ Example: if you need it to print; don't turn off cups or lpr/lpd services

Unix/Linux System hardening (cont)

❑ Questions?

Baselines

❑   What is a Baseline?

❑   How can this help us?

❑   What are some Baselines?

❑   Specific Details about Baselines.

❑   Demo

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Baselines (cont)

❑ What is a Baseline?

  ◻ A Baseline is (aka Merriam-Webster) – information that is used as a starting point by which to compare other information.

    ■ Not very helpful?

    ■ For a computer the starting point is when you install it from an ISO.

  ◻ Let us think of it as What we want a computer to allow it's users or process to be able to do or not do. A minimum security model, 'Least Privileges' or where is that line in the sand?

Baselines (cont)

- ❑ How can this help us?

  - ▫ This can help us trigger that something is wrong or someone is trying to make something go wrong.

  - ▫ Should we write a vulnerability (Possibly known as a 'Risk') against the delta or is it an exception we should track

  - ▫ Should we tighten up from detective to preventative?

- ❑ These are some questions that could help frame the specifics of what we find.

Baselines (cont)

❑ What are some Baselines?

    ◘ NIST – National Institute of Standards and Technology

        ■ https://usgcb.nist.gov/usgcb/rhel/download_rhel5.html

    ◘ CIS Benchmark – Center for Internet Security.

        ■ http://community.mis.temple.edu/mis5170sec001sp2017/files/2015/12/CIS_Debian_Linux_7_Benchmark_v1.0.0.pdf

    ◘ ISO 27002 – Information security standard published by the International Organization for Standardization.

    ◘ ISF – Information Security Forum.

        ■ https://www.securityforum.org/consultancy/information-security-readiness-benchmark/

    ◘ DISA Baselines

        ■ http://iase.disa.mil/stigs/os/unix-linux/Pages/index.aspx

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Baselines (cont)

❑   Specific Details about Baselines.

The `/etc/passwd` file contains user account information that is used by many system utilities and therefore must be readable for these utilities to operate.

Rationale:

It is critical to ensure that the `/etc/passwd` file is protected from unauthorized write access. Although it is protected by default, the file permissions could be changed either inadvertently or through malicious actions.

Audit:

Run the following command to determine the permissions on the `/etc/passwd` file.

```
# /bin/ls -l /etc/passwd
-rw-r--r-- 1 root root 2055 Jan 30 16:30 /etc/passwd
```

Remediation:

If the permissions of the `/etc/passwd` file are incorrect, run the following command to correct them:

```
# /bin/chmod 644 /etc/passwd
```

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Baselines (cont)

❑ Demo

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Baselines (cont)

- ❑ Questions?

Assignment 4 Overview

❑ Requirements – Same teams members as before

❑ Prep your VM

❑ Create a Box Location per team

❑ Copy to box location

❑ Share with Wade's class

❑ Get outside assessment of how you did

Next Week

❑ Assignment 4 Due Friday April 7th 11:59 pm

Quiz

❑ We can start the Quiz